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tical grape-growers of the United States." At the close of the chapter is given a list of some of the best tested resistant graft stocks.

Four more meaty chapters on Practical Grape Growing are condensed in 24 pages. Chapter V. treats well of culture from the seed to fruiting, including selection and preparation of soil, choice of varieties, planting, trellising, pruning and training, fertilization, etc. Chapter VI., on Protection from Insects and Fungi, discusses preventive measures, including grafting on resistant stocks, spraying and other remedies, with brief descriptions of enemies to the vine. Chapter VII. is short and crisp, dealing with marketing of the crop, only touching on wine and brandy, but giving some space to the manufacture of grape juice, raisins, jams and jellies. Chapter VIII. gives important hints on the selection and treatment of vines for fruit, adornment and other home uses.

In the matter of indices, often lacking or deficient in works of this class, the author merits high commendation. He has placed at the close of the volume no less than five adequate synopses, as follows: (1) List of Illustrations, with 97 entries, italics being used to designate plates of specific types; (2) Synopsis of Chapters, a complete table of contents, itemized fully; (3) Index of Species and Varieties (211, in all, described in the work); (4) Index of Topics, a general index, exclusive of species and varieties; (5) List of Tables. There are ten of these, segregating statistics of importance, chiefly original with the author.

Thus compressed in 252 pages  $7\frac{1}{2}$  inches by  $10\frac{1}{2}$  inches, in a well-bound volume, with clear sharp type impressed on good heavy paper, the well-known author has met his eager public in most commendable dress. This outcome of his zeal and patience, measured from any view-point, must long be regarded as a model of its kind. Every new experimenter with grapes is set a quarter century ahead by the knowledge here vouchsafed, and the record of the author's achievement must serve as inspiration to a host of earnest students in the same field. The book brings into clear perspective for the first time the full measure of

the scientific work of Dr. Munson. Its influence upon the development of viticulture the world over will be felt even more strongly by future generations.

THEO. B. COMSTOCK

LOS ANGELES, CAL.

*Exercise in Education and Medicine.* By R. TAIT MCKENZIE, A.B., M.D., Professor of Physical Education, and Director of the Department, University of Pennsylvania. Octavo of 406 pages, with 346 illustrations. Philadelphia and London, W. B. Saunders Company. 1909. Cloth, \$3.50 net; half morocco, \$5.00 net.

This book represents a distinct advance in the literature on physical exercise. It is well written, and interesting. It contains a good deal of material of scientific value. The various chapters are well supplied with first-class illustrations, some of which are from the author's own work. McKenzie's high rank as a sculptor is shown in the artistic features of these cuts. The text contains numerous references to the sources from which the author draws material. These references are ample for the general reader, though not sufficiently explicit for the investigating student.

The contents of the book are as follows:

Part I.: Exercise in Education—Chapter I., The Definition and Classification of Exercise; Chapter II., The Physiology of Exercise; Chapter III., Massage and Passive Motion; Chapter IV., Exercise by Apparatus; Chapter V., The German System of Physical Training; Chapter VI., The Swedish System of Gymnastics; Chapter VII., The Soft Business of Japan; Chapter VIII., Age, Sex and Occupation; Chapter IX., Playgrounds and Municipal Gymnasiums; Chapter X., Physical Education in Schools; Chapter XI., Physical Education in the College and University; Chapter XII., The Physical Education of the Blind, and Deaf Mute; Chapter XIII., Physical Education of Mental and Moral Defectives.

Part II.: Exercise in Medicine—Chapter I., The Application of Exercise to Pathogenic Conditions; Chapter II., Flat-foot and its Treatment; Chapter III., The Cause and

Treatment of Round Back, Stooped and Uneven Shoulders; Chapter IV., Scoliosis, its Causes, Varieties, Diagnosis and Prognosis; Chapter V., The Treatment of Scoliosis; Chapter VI., Exercise and Athletics as a Factor in Disease of the Circulation; Chapter VII., Obesity—its Cause and Treatment; Chapter VIII., Other Diseases of Nutrition; Chapter IX., Exercise in the Treatment of Nervous Diseases; Chapter X., The Treatment of Locomotor Ataxia by Exercise.

In reading the preface and looking over the table of contents one is struck with the fact that the author has planned to reach a wide range of readers, and for that reason has brought together a variety of material that is not usually so associated. He states in the preface that "the following pages are addressed to students and practitioners of physical training; to teachers of the youth; to students of medicine and to its practitioners, with the purpose to give a comprehensive view of the space exercise should hold in a complete scheme of education and in the treatment of abnormal or diseased conditions." A single text must be popularly written if it is planned for the student and practitioner of physical training; the teacher of the youth; and for the student and practitioner of medicine. The technicality of the average medical treatise is unintelligible to the average teacher of the youth or student or practitioner of physical training, and the usual presentation of the principles and practise of physical training contains more or less that is technical to all but the student and practitioner of physical training. Dr. McKenzie has succeeded in presenting Part I., Exercise in Education, with but little technicality, and Part II., Exercise in Medicine, with only moderate technicality. The book, therefore, is a popular book. It is, also, to some degree, a reference book.

On page 33 it is stated that "... in every course of athletic training the blood is still further thickened by restricting the amount of fluid ingested to replace evaporation." Dr. McKenzie takes the position that "condition" is the result of a "drying out" of the tissues

and a thickening of the blood. This is the point of view of the trainer, but it is a deduction which is hardly justified scientifically. It is true that exercise increases the specific gravity of the blood somewhat, but so does sleep. The ingestion of food and the progress of the day decreases the specific gravity. One can hardly draw relevant conclusions from such data. Furthermore, the present tendency on the part of trainers is to break away from strict water restrictions and the success of those trainers has been as great as under the so-called tissue-drying process.

Page 35, "milometers" should read "millimeters" (mercury).

The reasons assigned for blood pressure changes in the chapter on The Physiology of Exercise are almost entirely mechanical. The influences of the vaso-motor reflexes seem not to have been considered.

Page 39, "... in fatigue, the will tires long before the contracting power of the muscle is lost." Lee states that "the former and still common idea that the brain and spinal cord are readily fatiguable, and in fact are the first part of the individual to succumb in a contest, seems not to be justified by the experiments of Hough, Storey, Woodworth, Joleyko, Kraepelin and others."<sup>1</sup>

Page 42, "The men were then wrapped in blankets . . . and showed a further loss (in weight). In no case was any gain found." Dr. McKenzie should have given his series of experiments a fuller consideration. There is back of the sentence "in no case was any gain found," an interesting discussion and investigation of the question as to the possibility of a gain in weight from inspired oxygen after extreme losses in weight during strenuous exercise.

Pages 126 and 129. A reference or an account of the researches on which the results are based should accompany the very interesting and valuable tables classifying athletic games and exercise, and giving their influence on blood pressure.

<sup>1</sup>"Physical Exercise from the Standpoint of Physiology," Frederic S. Lee, *Amer. Physical Educ. Review*, April, 1909, p. 5.

Page 142. The sand box is recommended for playgrounds. I think there is no other single feature that figures in the equipment of a playground that even approaches the sand box in its unhygienic, bacteriological and parasitic possibilities.

Page 167. Dr. McKenzie advises the use of floor sockets for fixing apparatus like the horse, parallel and horizontal bars on the floor of the exercising hall. It is only fair to state that a number of men have found or judged this device to be less convenient and utilitarian than the old movable apparatus. The experience at Pennsylvania, however, has been satisfactory.

Page 191. It is stated that summer courses in physical instruction are given at the College of the City of New York. This is a mistake.

Part II., Exercise in Medicine, contains much that interests the non-medical reader. It is rather too popular and brief for the specialist or general practitioner concerned with the various diseases discussed. It contains very little which the "teacher of the youth" would be expected to apply. The average "student and the practitioner of physical training" who has had no medical experience should not attempt the treatment of medical cases unless under the direction of a competent physician. "Round back and stooped and uneven shoulders" are not necessarily medical; but scoliosis and locomotor ataxia are samples of abnormal conditions which the non-medical man would do well to leave alone—unless he has a training and an experience like that of Bolin.

But I take it Dr. McKenzie has not attempted to prepare a text-book for such readers, but rather to present a discussion which will show them the relation of exercise to the treatment of various diseases so that they may secure an intelligent sympathy for the logical and common-sense principles which he has brought together.

In conclusion it may be said that in its "purpose to give a comprehensive view of the space exercise should hold in a complete scheme of education and in the treatment of abnormal or diseased conditions," this book is a success.

THOMAS A. STOREY

*Second Appendix to the Sixth Edition of Dana's System of Mineralogy.* By EDWARD S. DANA and WILLIAM E. FORD. New York, John Wiley & Sons. 1909.

Dana's "System of Mineralogy," as a standard work of reference, has become so indispensable to every one interested in minerals that all additions to it, which tend to bring the work up to date, will always be welcomed. Ten years have elapsed since the first appendix appeared and this period has been one of great activity in mineralogical research. Many new mineral names have been proposed, and new occurrences, forms and physical properties of known species have been described. This second appendix contains an excellent bibliography of mineralogical literature issued during the ten years with a concise statement of the subject matter of each article and quotation of new forms, and complete descriptions of all minerals that have been announced as new species; consequently references to several hundred minerals are included in the book. Over two hundred new names have been proposed for minerals and from this number the authors have selected about sixty, on account of their better descriptions, as meriting the distinction of being new species. As to this limited selection from so many new compounds, some disagreement with the authors may arise, but they feel justified in relegating to subordinate rank most of the so-called new minerals, because of the insufficient data to establish their recognition as species.

The appendix is similar in size, binding and arrangement of contents to the first one, issued in 1899. The minerals are arranged in alphabetical order with all of the new names in heavy-faced type, but in the classified list only those considered as new species are in bold type. The great task of preparing this appendix was begun by the senior author and continued by him until 1906 when his health compelled him to give up the work, and it devolved upon the junior author to complete the book to the present year, which he has ably done.

Every scientific investigator will deeply regret the loss of Professor Dana from active work, and it is the heart-felt wish of his legion of friends that he may speedily regain his health and strength. With his retirement, and